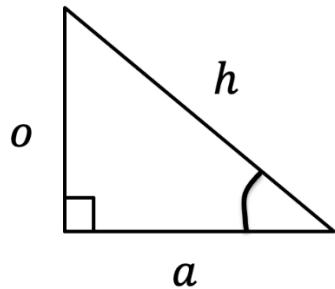
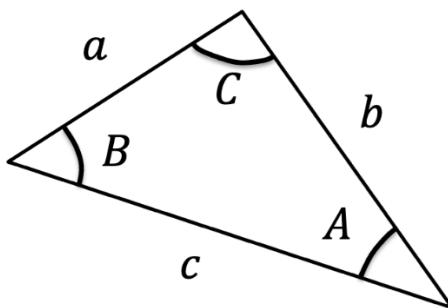


Right-Angled Triangles:

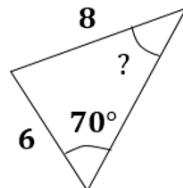


Non-Right-Angled Triangles:



We label the sides a, b, c and their corresponding OPPOSITE angles A, B, C

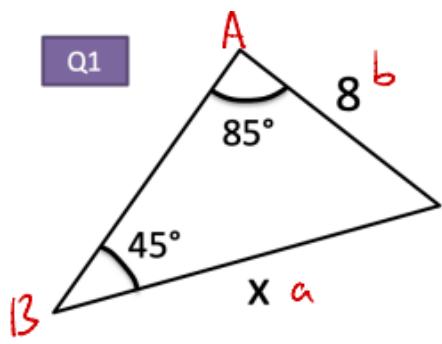
You have	You want	Use
#1: Two angle-side opposite pairs	Missing angle or side in one pair	Sine rule



Sine Rule:

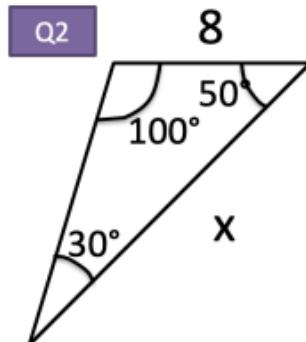
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Examples



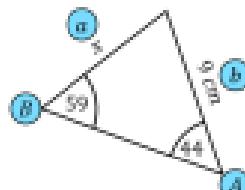
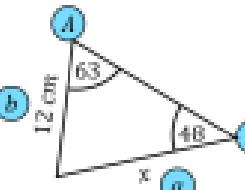
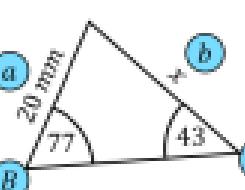
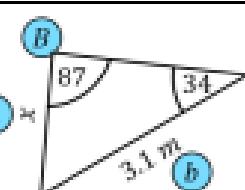
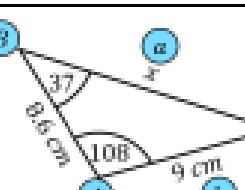
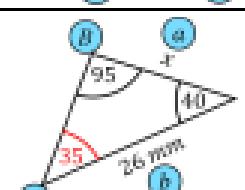
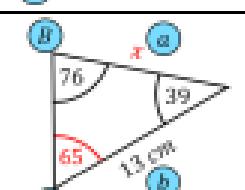
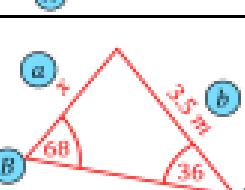
$$\frac{x}{\sin 85} = \frac{8}{\sin 45}$$

$$x = 11.27$$

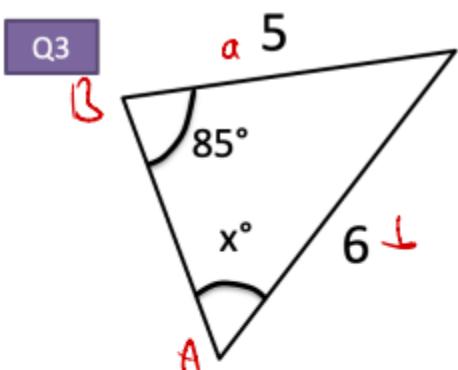


$$\frac{c}{\sin 100} = \frac{8}{\sin 30}$$

$$c = 15.76$$

Labelled diagram	Substitute into formula	Rearrange formula	Length (1dp)
	$\frac{x}{\sin 44} = \frac{9}{\sin 59}$	$x = \frac{9 \times \sin 44}{\sin 59}$	$x = 7.3 \text{ cm}$
	$\frac{x}{\sin 63} = \frac{12}{\sin 48}$	$x = \frac{12 \times \sin 63}{\sin 48}$	$x = 14.4 \text{ cm}$
	$\frac{20}{\sin 43} = \frac{x}{\sin 77}$	$x = \frac{20 \times \sin 77}{\sin 43}$	$x = 28.6 \text{ mm}$
	$\frac{x}{\sin 34} = \frac{3.1}{\sin 87}$	$x = \frac{3.1 \times \sin 34}{\sin 87}$	$x = 1.7 \text{ m}$
	$\frac{x}{\sin 108} = \frac{9}{\sin 37}$	$x = \frac{9 \times \sin 108}{\sin 37}$	$x = 14.2 \text{ cm}$
	$\frac{x}{\sin 35} = \frac{26}{\sin 95}$	$x = \frac{26 \times \sin 35}{\sin 95}$	$x = 15.0 \text{ mm}$
	$\frac{x}{\sin 65} = \frac{13}{\sin 76}$	$x = \frac{13 \times \sin 65}{\sin 76}$	$x = 12.1 \text{ cm}$
	$\frac{x}{\sin 36} = \frac{3.5}{\sin 68}$	$x = \frac{3.5 \times \sin 36}{\sin 68}$	$x = 2.2 \text{ m}$

Examples 2

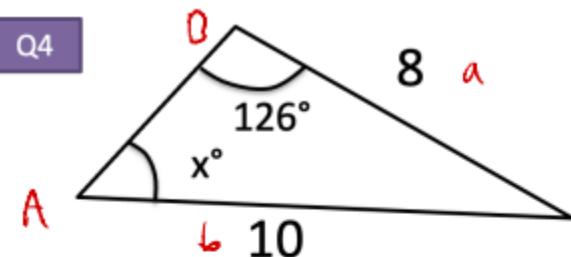


FLIP FORMULA

$$\frac{\sin A}{a} = \frac{\sin B}{b}$$

$$\frac{\sin C}{c} = \frac{\sin B}{b}$$

$$x = 56.11^\circ$$



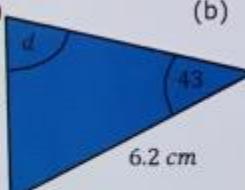
$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

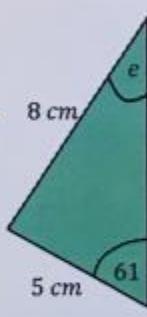
$$\frac{\sin x}{8} = \frac{\sin 126}{10}$$

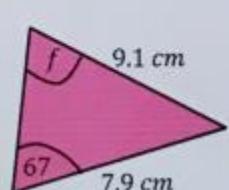
$$x = 40.33^\circ$$

Test your understanding

Find the missing angle.

(a) 

(b) 

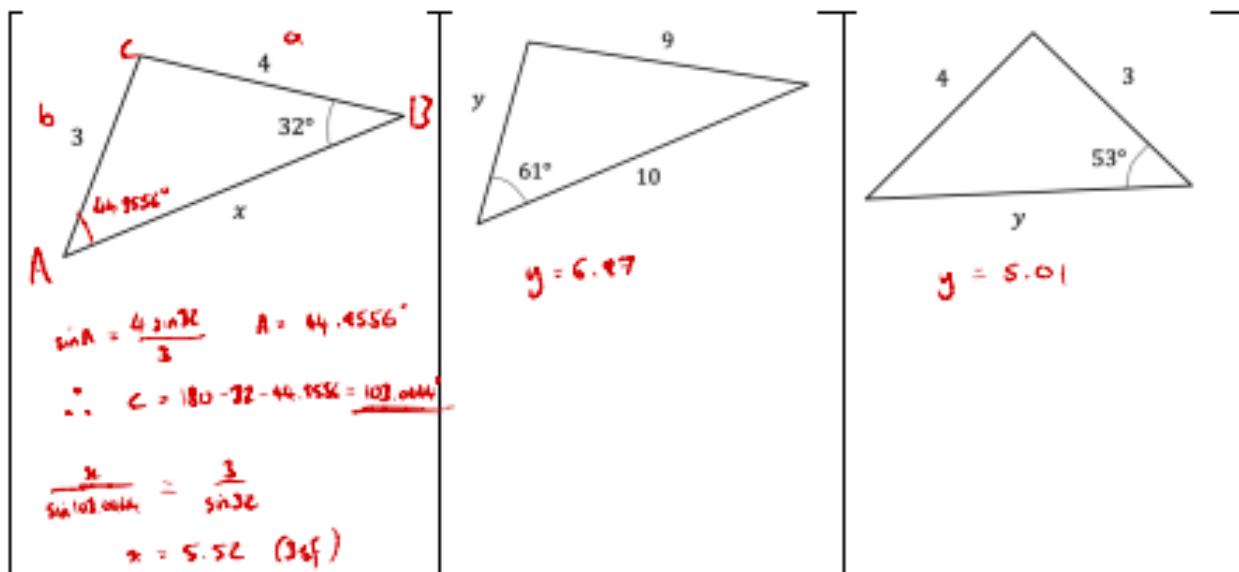
(c) 

(a) 61.8°
 (b) 33.1°
 (c) 53.0°
 (d) 25.7°
 (e) 46.0°

Labelled diagram	Substitute into formula	Rearrange formula	Acute Angle (1dp)
	$\frac{\sin 36}{5} = \frac{\sin x}{7}$	$\sin x = \frac{7 \times \sin 36}{5}$	$x = 55.4^\circ$
	$\frac{\sin x}{23} = \frac{\sin 93}{36}$	$\sin x = \frac{23 \times \sin 93}{36}$	$x = 39.6^\circ$
	$\frac{\sin 29}{8} = \frac{\sin x}{11.5}$	$\sin x = \frac{11.5 \times \sin 29}{8}$	$x = 44.2^\circ$
	$\frac{\sin x}{1.5} = \frac{\sin 49}{1.3}$	$\sin x = \frac{1.5 \times \sin 49}{1.3}$	$x = 60.6^\circ$
	$\frac{\sin x}{60} = \frac{\sin 90}{67}$	$\sin x = \frac{60 \times \sin 90}{67}$	$x = 63.6^\circ$
	$\frac{\sin x}{9} = \frac{\sin 76}{12}$	$\sin x = \frac{9 \times \sin 76}{12}$	$x = 46.7^\circ$
	$\frac{\sin x}{13} = \frac{\sin 31}{67}$	$\sin x = \frac{13 \times \sin 31}{67}$	$x = 87.9^\circ$
	$\frac{\sin x}{5} = \frac{\sin 47}{10}$	$\sin x = \frac{5 \times \sin 47}{10}$	$x = 21.4^\circ$

USE SINE RULE TWICE !!!

Extension



Problem Solving

